

Application No. 10/799,514
Amendment dated June 17, 2009
After Final Office Action of December 17, 2008

Docket No.: 30985/41486

SEQUENCE LISTING (PAGES 1-16)

SEQUENCE LISTING

<110> Spertini, et al.
 <120> ALLERGEN PEPTIDE FRAGMENTS AND USE THEREOF
 <130> 30985/41486A
 <140> 11/226,162
 <141> 2005-09-14
 <150> 60/455,004
 <151> 2000-03-14
 <150> 10/799,514
 <151> 2004-03-12
 <150> PCT/IB04/01300
 <151> 2004-03-15
 <160> 23
 <170> PatentIn version 3.5
 <210> 1
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 <223> Description of Artificial Sequence: Synthetic Peptide
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 1 5 10 15
 Gly Pro Asn Glu Leu Gly Arg Phe Lys His Thr Asp Ala Cys Cys Arg
 20 25 30
 Thr His Asp Met Cys Pro Asp Val Met Ser Ala Gly Glu Ser Lys His
 35 40 45
 Gly Leu Thr Asn Thr Ala Ser His Thr Arg Leu Ser
 50 55 60
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 <400> 2
 Lys His Gly Leu Thr Asn Thr Ala Ser His Thr Arg Leu Ser Cys Asp
 1 5 10 15

Cys Asp Asp Lys Phe Tyr Asp Tyr Leu Lys Asn Ser Ala Asp Thr Ile
 20 25 30

Ser Ser Tyr Pro Val Gly Lys Met Tyr Phe Asn Leu Ile Asp Thr Lys
 35 40 45

Cys Tyr Lys Leu Glu
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<210> 3
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 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 3

Leu Ile Asp Thr Lys Cys Tyr Lys Leu Glu His Pro Val Thr Gly Cys
 1 5 10 15

Gly Glu Arg Thr Glu Gly Arg Cys Leu His Tyr Thr Val Asp Lys Ser
 20 25 30

Lys Pro Lys Val Tyr Gln Trp Phe Asp Leu Arg Lys Tyr
 35 40 45

<210> 4
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<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 4

Ile Ile Tyr Pro Gly Thr Leu Trp Cys Gly His Gly Asn Lys Ser Ser
 1 5 10 15

Gly Pro Asn Glu Leu Gly Arg Phe Lys His Thr Asp Ala Cys Cys Arg
 20 25 30

Thr His Asp Met Cys Pro Asp Val Met Ser Ala Gly Glu Ser Lys His
 35 40 45

Gly Leu Thr Asn Thr Ala Ser His Thr Arg Leu Ser Cys Asp Cys Asp
 50 55 60

Asp Lys Phe Tyr Asp Cys Leu Lys Asn Ser Ala Asp Thr Ile Ser Ser
 65 70 75 80

Tyr Phe Val Gly Lys Met Tyr Phe Asn Leu Ile Asp Thr Lys Cys Tyr
85 90 95

Tyr Leu Glu His Pro Val Thr Gly Cys Gly Glu Arg Thr Glu Gly Arg
100 105 110

Cys Leu His Tyr Thr Val Asp Lys Ser Lys Pro Lys Val Tyr Gln Trp
115 120 125

Phe Asp Leu Arg Lys Tyr
130

<210> 5
<211> 125
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 5

Met Gly Val Phe Asn Tyr Glu Thr Glu Ala Thr Ser Val Ile Pro Ala
1 5 10 15

Ala Arg Leu Phe Lys Ala Pro Ile Leu Asp Gly Asp Asn Leu Phe Pro
20 25 30

Lys Val Ala Pro Gln Ala Ile Ser Val Glu Asn Ile Glu Gly Asn
35 40 45

Gly Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Phe Pro
50 55 60

Phe Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Asn Phe
65 70 75 80

Lys Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu
85 90 95

Glu Lys Ile Ser Asn Glu Ile Lys Ile Val Ala Thr Pro Asp Gly Gly
100 105 110

Ser Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly
115 120 125

<210> 6
<211> 80
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<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 6

Lys Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu
1 5 10 15

Glu Lys Ile Ser Asn Glu Ile Lys Ile Val Ala Thr Pro Asp Gly Gly
20 25 30

Ser Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu
35 40 45

Val Lys Ala Glu Gln Val Lys Ala Ser Lys Glu Met Gly Glu Thr Leu
50 55 60

Leu Arg Ala Val Glu Ser Tyr Leu Leu Ala His Ser Asp Ala Tyr Asn
65 70 75 80

<210> 7

<211> 160

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 7

Met Gly Val Phe Asn Tyr Glu Thr Glu Ala Thr Ser Val Ile Pro Ala
1 5 10 15

Ala Arg Leu Phe Lys Ala Phe Ile Leu Asp Gly Asp Asn Leu Phe Pro
20 25 30

Lys Val Ala Pro Gln Ala Ile Ser Ser Val Glu Asn Ile Glu Gly Asn
35 40 45

Gly Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Phe Pro
50 55 60

Phe Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Asn Phe
65 70 75 80

Lys Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu
85 90 95

Glu Lys Ile Ser Asn Glu Ile Lys Ile Val Ala Thr Pro Asp Gly Gly
100 105 110

Ser Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu
115 120 125

Val Lys Ala Glu Gln Val Lys Ala Ser Lys Glu Met Gly Glu Thr Leu
130 135 140

Leu Arg Ala Val Glu Ser Tyr Leu Leu Ala His Ser Asp Ala Tyr Asn
145 150 155 160

<210> 8
<211> 70
<212> PRT
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 8

Met Ser Trp Gln Thr Tyr Val Asp Glu His Leu Met Ser Asp Ile Asp
1 5 10 15

Gly Gln Ala Ser Asn Ser Leu Ala Ser Ala Ile Val Gly His Asp Gly
20 25 30

Ser Val Trp Ala Gln Ser Ser Ser Phe Pro Gln Phe Lys Pro Gln Glu
35 40 45

Ile Thr Gly Ile Met Lys Asp Phe Glu Glu Pro Gly His Leu Ala Pro
50 55 60

Thr Gly Leu His Leu Gly
65 70

<210> 9
<211> 73
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 9

His Leu Ala Pro Thr Gly Leu His Leu Gly Gly Ile Lys Tyr Met Val
1 5 10 15

Ile Gln Gly Glu Ala Gly Ala Val Ile Arg Gly Lys Lys Gly Ser Gly
20 25 30

Gly Ile Thr Ile Lys Lys Thr Gly Gln Ala Leu Val Phe Gly Ile Tyr
35 40 45

Glu Glu Pro Val Thr Pro Gly Gln Ser Asn Met Val Val Glu Arg Leu
 50 55 60

Gly Asp Tyr Leu Ile Asp Gln Gly Leu
 65 70

<210> 10
 <211> 133
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 10

Met Ser Trp Gln Thr Tyr Val Asp Glu His Leu Met Ser Asp Ile Asp
 1 5 10 15

Gly Gln Ala Ser Asn Ser Leu Ala Ser Ala Ile Val Gly His Asp Gly
 20 25 30

Ser Val Trp Ala Gln Ser Ser Ser Phe Pro Gln Phe Lys Pro Gln Glu
 35 40 45

Ile Thr Gly Ile Met Lys Asp Phe Glu Glu Pro Gly His Leu Ala Pro
 50 55 60

Thr Gly Leu His Leu Gly Gly Ile Lys Tyr Met Val Ile Gln Gly Glu
 65 70 75 80

Ala Gly Ala Val Ile Arg Gly Lys Lys Gly Ser Gly Gly Ile Thr Ile
 85 90 95

Lys Lys Thr Gly Gln Ala Leu Val Phe Gly Ile Tyr Glu Glu Pro Val
 100 105 110

Thr Pro Gly Gln Ser Asn Met Val Val Glu Arg Leu Gly Asp Tyr Leu
 115 120 125

Ile Asp Gln Gly Leu
 130

<210> 11
 <211> 81
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 11

Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
 1 5 10 15

Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
 20 25 30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
 35 40 45

Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
 50 55 60

Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
 65 70 75 80

Glu

<210> 12
 <211> 86
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 12

Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile Glu Tyr
 1 5 10 15

Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr Val Ala
 20 25 30

Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly Ile Ser
 35 40 45

Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg Glu Ala
 50 55 60

Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile Lys Asp
 65 70 75 80

Leu Asp Ala Phe Arg His
 85

<210> 13
 <211> 86
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 13

Ala Ile Ala Val Ile Ile Gly Ile Lys Asp Leu Asp Ala Phe Arg His
1 5 10 15

Tyr Asp Gly Arg Thr Ile Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn
20 25 30

Tyr His Ala Val Asn Ile Val Gly Tyr Ser Asn Ala Gln Gly Val Asp
35 40 45

Tyr Trp Ile Val Arg Asn Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly
50 55 60

Tyr Gly Tyr Phe Ala Ala Asn Ile Asp Leu Met Met Ile Glu Glu Tyr
65 70 75 80

Pro Tyr Val Val Ile Leu
85

<210> 14

<211> 222

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic Peptide

<400> 14

Thr Asn Ala Cys Ser Ile Asn Gly Asn Ala Pro Ala Glu Ile Asp Leu
1 5 10 15

Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly
20 25 30

Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu
35 40 45

Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp
50 55 60

Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile
65 70 75 80

Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr
85 90 95

Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly
 100 105 110
 Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg
 115 120 125
 Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile
 130 135 140
 Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile Ile Gln
 145 150 155 160
 Arg Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn Ile Val Gly
 165 170 175
 Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp
 180 185 190
 Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile
 195 200 205
 Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu
 210 215 220
 <210> 15
 <211> 72
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 <400> 15
 Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
 1 5 10 15
 Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
 20 25 30
 Lys Pro Phe Gln Leu Glu Ala Val Phe Glu Ala Asn Gln Asn Thr Lys
 35 40 45
 Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
 50 55 60
 Val Pro Gly Ile Asp Pro Asn Ala
 65 70
 <210> 16

<211> 73
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 16

Ser Ile Asp Gly Leu Glu Val Asp Val Pro Gly Ile Asp Pro Asn Ala
1 5 10 15

Cys His Tyr Met Lys Cys Pro Leu Val Lys Gly Gln Gln Tyr Asp Ile
20 25 30

Lys Tyr Thr Trp Asn Val Pro Lys Ile Ala Pro Lys Ser Glu Asn Val
35 40 45

Val Val Thr Val Lys Val Met Gly Asp Asp Gly Val Leu Ala Cys Ala
50 55 60

Ile Ala Thr His Ala Lys Ile Arg Asp
65 70

<210> 17
<211> 136
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 17

Leu Val Ala Ala Val Ala Arg Asp Gln Val Asp Val Lys Asp Cys Ala
1 5 10 15

Asn His Glu Ile Lys Lys Val Leu Val Pro Gly Cys His Gly Ser Glu
20 25 30

Pro Cys Ile Ile His Arg Gly Lys Pro Phe Gln Leu Glu Ala Val Phe
35 40 45

Glu Ala Asn Gln Asn Thr Lys Thr Ala Lys Ile Glu Ile Lys Ala Ser
50 55 60

Ile Asp Gly Leu Glu Val Asp Val Pro Gly Ile Asp Pro Asn Ala Cys
65 70 75 80

His Tyr Met Lys Cys Pro Leu Val Lys Gly Gln Gln Tyr Asp Ile Lys
85 90 95

Tyr Thr Trp Asn Val Pro Lys Ile Ala Pro Lys Ser Glu Asn Val Val
 100 105 110
 Val Thr Val Lys Val Met Gly Asp Asp Gly Val Leu Ala Cys Ala Ile
 115 120 125
 Ala Thr His Ala Lys Ile Arg Asp
 130 135
 <210> 18
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 Met Gly Val Phe Asn Tyr Glu Thr Glu Ala Thr Ser Val Ile Pro Ala
 1 5 10 15
 Ala Arg Leu Phe Lys Ala Phe Ile Leu Asp Gly Asp Asn Leu Phe Pro
 20 25 30
 Lys Val Ala Pro Gln Ala Ile Ser Ser Val Glu Asn Ile Glu Gly Asn
 35 40 45
 Gly Gly Pro Gly Thr Ile Lys Lys Ile Ser Phe Pro Glu Gly Phe Pro
 50 55 60
 Phe Lys Tyr Val Lys Asp Arg Val Asp Glu Val Asp His Thr Asn Phe
 65 70 75 80
 Lys Tyr Asn Tyr Ser Val Ile Glu Gly Gly His Pro Val Thr Gly Cys
 85 90 95
 Gly Glu Arg Thr Glu Gly Arg Cys Leu His Tyr Thr Val Asp Lys Ser
 100 105 110
 Lys Pro Lys Val Tyr Gln Trp Phe Asp Leu Arg Lys Tyr Met Ser Trp
 115 120 125
 Gln Thr Tyr Val Asp Glu His Leu Met Ser Asp Ile Asp Gly Gln Ala
 130 135 140
 Ser Asn Ser Leu Ala Ser Ala Ile Val Gly His Asp Gly Ser Val Trp
 145 150 155 160
 Ala Gln Ser Ser Ser Phe Pro Gln Phe Lys Pro Gln Glu Ile Thr Gly

165

170

175

Ile Met Lys Asp Phe Glu Glu Pro Gly His Leu Ala Pro Thr Gly Leu
 180 185 190

His Leu Gly
 195

<210> 19
 <211> 153
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 19

His Leu Ala Pro Thr Gly Leu His Leu Gly Gly Ile Lys Tyr Met Val
 1 5 10 15

Ile Gln Gly Glu Ala Gly Ala Val Ile Arg Gly Lys Lys Gly Ser Gly
 20 25 30

Gly Ile Thr Ile Lys Lys Thr Gly Gln Ala Leu Val Phe Gly Ile Tyr
 35 40 45

Glu Glu Pro Val Thr Pro Gly Gln Ser Asn Met Val Val Glu Arg Leu
 50 55 60

Gly Asp Tyr Leu Ile Asp Gln Gly Leu Lys Tyr Asn Tyr Ser Val Ile
 65 70 75 80

Glu Gly Gly Pro Ile Gly Asp Thr Leu Glu Lys Ile Ser Asn Glu Ile
 85 90 95

Lys Ile Val Ala Thr Pro Asp Gly Gly Ser Ile Leu Lys Ile Ser Asn
 100 105 110

Lys Tyr His Thr Lys Gly Asp His Glu Val Lys Ala Glu Gln Val Lys
 115 120 125

Ala Ser Lys Glu Met Gly Glu Thr Leu Leu Arg Ala Val Glu Ser Tyr
 130 135 140

Leu Leu Ala His Ser Asp Ala Tyr Asn
 145 150

<210> 20
 <211> 195

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<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Peptide

<400> 20

Met Ser Trp Gln Thr Tyr Val Asp Glu His Leu Met Ser Asp Ile Asp
1          5          10          15

Gly Gln Ala Ser Asn Ser Leu Ala Ser Ala Ile Val Gly His Asp Gly
20          25          30

Ser Val Trp Ala Gln Ser Ser Ser Phe Pro Gln Phe Lys Pro Gln Glu
35          40          45

Ile Thr Gly Ile Met Lys Asp Phe Glu Glu Pro Gly His Leu Ala Pro
50          55          60

Thr Gly Leu His Leu Gly Met Gly Val Phe Asn Tyr Glu Thr Glu Ala
65          70          75          80

Thr Ser Val Ile Pro Ala Ala Arg Leu Phe Lys Ala Phe Ile Leu Asp
85          90          95

Gly Asp Asn Leu Phe Pro Lys Val Ala Pro Gln Ala Ile Ser Ser Val
100         105         110

Glu Asn Ile Glu Gly Asn Gly Gly Pro Gly Thr Ile Lys Lys Ile Ser
115         120         125

Phe Pro Glu Gly Phe Pro Phe Lys Tyr Val Lys Asp Arg Val Asp Glu
130         135         140

Val Asp His Thr Asn Phe Lys Tyr Asn Tyr Ser Val Ile Glu Gly Gly
145         150         155         160

His Pro Val Thr Gly Cys Gly Glu Arg Thr Glu Gly Arg Cys Leu His
165         170         175

Tyr Thr Val Asp Lys Ser Lys Pro Lys Val Tyr Gln Trp Phe Asp Leu
180         185         190

Arg Lys Tyr
195

<210> 21
<211> 153
<212> PRT

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<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 21

Lys Tyr Asn Tyr Ser Val Ile Glu Gly Gly Pro Ile Gly Asp Thr Leu
1 5 10 15

Glu Lys Ile Ser Asn Glu Ile Lys Ile Val Ala Thr Pro Asp Gly Gly
20 25 30

Ser Ile Leu Lys Ile Ser Asn Lys Tyr His Thr Lys Gly Asp His Glu
35 40 45

Val Lys Ala Glu Gln Val Lys Ala Ser Lys Glu Met Gly Glu Thr Leu
50 55 60

Leu Arg Ala Val Glu Ser Tyr Leu Leu Ala His Ser Asp Ala Tyr Asn
65 70 75 80

His Leu Ala Pro Thr Gly Leu His Leu Gly Gly Ile Lys Tyr Met Val
85 90 95

Ile Gln Gly Glu Ala Gly Ala Val Ile Arg Gly Lys Lys Gly Ser Gly
100 105 110

Gly Ile Thr Ile Lys Lys Thr Gly Gln Ala Leu Val Phe Gly Ile Tyr
115 120 125

Glu Glu Pro Val Thr Pro Gly Gln Ser Asn Met Val Val Glu Arg Leu
130 135 140

Gly Asp Tyr Leu Ile Asp Gln Gly Leu
145 150

<210> 22

<211> 153

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Peptide

<400> 22

Asp Gln Val Asp Val Lys Asp Cys Ala Asn His Glu Ile Lys Lys Val
1 5 10 15

Leu Val Pro Gly Cys His Gly Ser Glu Pro Cys Ile Ile His Arg Gly
20 25 30

Lys Pro Phe Gln Leu Glu Ala Val Phe Glu Ala Asn Gln Asn Thr Lys
 35 40 45

Thr Ala Lys Ile Glu Ile Lys Ala Ser Ile Asp Gly Leu Glu Val Asp
 50 55 60

Val Pro Gly Ile Asp Pro Asn Ala Thr Asn Ala Cys Ser Ile Asn Gly
 65 70 75 80

Asn Ala Pro Ala Glu Ile Asp Leu Arg Gln Met Arg Thr Val Thr Pro
 85 90 95

Ile Arg Met Gln Gly Gly Cys Gly Ser Cys Trp Ala Phe Ser Gly Val
 100 105 110

Ala Ala Thr Glu Ser Ala Tyr Leu Ala Tyr Arg Asn Gln Ser Leu Asp
 115 120 125

Leu Ala Glu Gln Glu Leu Val Asp Cys Ala Ser Gln His Gly Cys His
 130 135 140

Gly Asp Thr Ile Pro Arg Gly Ile Glu
 145 150

<210> 23
 <211> 159
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<220>
 <223> Description of Artificial Sequence: Synthetic Peptide

<400> 23

Ala Ile Ala Val Ile Ile Gly Ile Lys Asp Leu Asp Ala Phe Arg His
 1 5 10 15

Tyr Asp Gly Arg Thr Ile Ile Gln Arg Asp Asn Gly Tyr Gln Pro Asn
 20 25 30

Tyr His Ala Val Asn Ile Val Gly Tyr Ser Asn Ala Gln Gly Val Asp
 35 40 45

Tyr Trp Ile Val Arg Asn Ser Trp Asp Thr Asn Trp Gly Asp Asn Gly
 50 55 60

Tyr Gly Tyr Phe Ala Ala Asn Ile Asp Leu Met Met Ile Glu Glu Tyr
 65 70 75 80

Pro Tyr Val Val Ile Leu Ser Ile Asp Gly Leu Glu Val Asp Val Pro
85 90 95

Gly Ile Asp Pro Asn Ala Cys His Tyr Met Lys Cys Pro Leu Val Lys
100 105 110

Gly Gln Gln Tyr Asp Ile Lys Tyr Thr Trp Asn Val Pro Lys Ile Ala
115 120 125

Pro Lys Ser Glu Asn Val Val Val Thr Val Lys Val Met Gly Asp Asp
130 135 140

Gly Val Leu Ala Cys Ala Ile Ala Thr His Ala Lys Ile Arg Asp
145 150 155